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Association of physical activity, physical inactivity and dietary habits with the alteration in lipid profile, atherogenic index of plasma, adiposity indices and fasting blood glucose among medical students at Omdurman Al Ahlia University

A thesis submitted for partial Fulfilment of the Requirements for the Degree of Master of Sciences in Human physiology

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بسم الله الرحمن الرحيم

{قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أن العليم الحكيم}

صدق الله العظيم

سوره البقره – الآية 32

DECLARATION

This thesis is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions.

The work was done under the guidance of Dr AsimA laaeldin Osman at the department of physiology, Faculty of Medicine, International Africa University.

Ahmed Doleib Ahmed Abu Elgasim[signature]

In my capacity as supervisor of the candidate's thesis, I certify that the above statements are true to the best of my knowledge.

Dr Asim Alaaeldin Osman

[signature]

Date:

DEDICATION:

To my family

To My parents and my sisters.

To my supervisor: Dr. Asim A. Osman

To: Dr. Ahmed Hussein Maroud

For support and encouragement

To my friends, colleges

To the sole of

Professor: Mansour .A. Balal

Acknowledgement

Those persons who do not thank people do not thank God

I am gratefully indebted to thanks Dr. Asim Alaaeldin, who has supervised this study and offered his invaluable supervision, direction, encouragement and guidance throughout this work and to the department of physiology staff of International University of Africa for their support and cooperation. All thanks to Omdurman Al Ahlia University- Faculty of Medicine for all laboratory facilitations to bring out this work, and to all participant students in this study. Finally thanks to my family and my friends for being on my side whenever I needed them.

ملخص الدراسة

اهداف الدراسة: تهدف لدراسة تأثير النشاط البدني ؛ العادات الغذائية وطول فترة الجلوس وقلة الحركة على المعدلات العامة للدهون ومقاييس معدل تراكم الدهون في منطقة الأحشاء والبطن ومعدل قياس تصلب الاوعية الدموية ومعدل الجلوكوز في الدم للطلاب الدارسين في كلية الطب بجامعة امدرمان الاهلية.

الطرق والوسائل : شارك 207 من الطلبة في الدراسة (100 طالب و 107 طالبة) واخذت مقاييس الطول والوزن ومحيط الخصر والبطن بالطرق القياسية العلمية. اخذت عينات الدم من المشاركين بعد فتره صيام عن الطعام 10-12 ساعه لقياس معدلات الدهون ؛ استخدمت في هذه الدراسة استبيان (ATLS) المصمم لدراسة السمنة وزيادة الوزن المرتبط بنمط الحياه عند المراهقين والبالغين العرب في المراحل الدراسية المختلفة والمعتمد لمنطقه الخليج والعالم العربي.

النتائج : اظهرت النتائج ان نسبة الناشطين بدنيا او المنتظمين في ممارسة الرياضة في عينة البحث من الطلبة لا تتجاوز 28.5% اي 59 طالب وطالبة فقط بينما نسبه الطلاب والطالبات ممن لا يمارسون نشاطا بدنيا 71% اي 148 طالب وطالبة . اظهرت نتائج البحث زيادة نسبة معدلات تراكم الدهون في منطقة البطن وزيادة معدل التصلب في الاوعية الدموية المرتبطة بتناول الاطعمة الدسمة ذات المحتوى العالي من الدهون والاطعمة والمشروبات المحلاة بين الطلاب والطالبات وخاصة الطالبات. ايضا اظهرت الدراسة وجود علاقة طردية بين معدل تراكم الدهون في منطقة البطن والاحشاء وزيادة معدلات ساعات النوم.

الخلاصة : ممارسة الانشطة الرياضية بانتظام وتناول الاطعمة الصحية وتقليل فترة الجلوس في مرحلة البلوغ والمراهقه من العوامل المهمة في مكافحة السمنة والبدانة والتي تؤدي الى الاصابة بالامراض المرتبطة بالسمنة كمرض السكري وامراض القلب وارتفاع ضغط الدم وتصلب الشرايين مع في هذه الاعمار

Abstract

Objectives: this study designed to evaluate the effect of physical activity status and dietary habits on the lipids profile, adiposity indices, fasting blood glucose and atherogenic index of plasma among medical students in Omdurman Al ahlia University.

Methods: Across sectional study included 207 students (100 males and 107 females). Anthropometric measurements were obtained by standard procedures and blood samples were taken after fasting period 12 hours for lipid profile evaluation, adiposity and glucose measurements. ATLS questionnaire was used for evaluation of physical activity, physical inactivity and dietary habits of the participants.

Result: Our present study revealed that Adiposity indices especially LAP, VAI and HC are significantly higher in females than males. Furthermore, physical activity was significantly higher in males than females. LAP and VAI significantly negatively correlated with the high intensity sports. LAP significantly higher in inactive participants, LAP and VAI significantly positively correlated with average increase in sleeping hours.

Regarding lipids profile, LDL was significantly higher in males than females. TG was significant negatively correlated with the frequency of using stair. TG was significant positively correlated with average increase sleeping hours. High TG was associated with increase fruits intake. TC was significant negatively correlated with the time spending in dancing in female. AIP was significantly higher in males and significantly higher in inactive participants

Conclusion: Low physical activity, bad dietary habits and increase sedentary time lead to enlarged visceral adiposity that alter lipid profile and increase the incidence for metabolic syndrome.

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Symbols and abbreviations

Abbreviation	Means
AIP	Atherogenic index of plasma
OAU	Omdurman Al Ahlia University
IUA	International University of Africa
ATLS	Arab Teens Lifestyle questionnaire
LAP	Lipids accumulation products
VAI	Visceral Adiposity Index
FBG	Fasting blood glucose
METs	Metabolic Equivalent-min per week
BMI	Body Mass Index.
WC	Waist circumference
HC	Hip circumference
W/H ratio	Waist/ Hip circumference ratio